

Appln No. 09/819,864

Amdt date November 24, 2004

Reply to Office action of September 21, 2004

**REMARKS/ARGUMENTS**

Claims 1, 5-17, 20-28, 30, 41-58, and 61-64 are pending. Claims 1, 5, 7, 41-44, and 46-47 are amended; and claims 31-40, and 59-60 are cancelled.

Claims 8-17, 20-28, 30, 57 and 58 are allowed. Claims 31, 32, 36, 37, 39, and 40 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 18 and 20-24, respectively, of co-pending Application No. 09/888,242. Claims 31-40 and 59-60 are cancelled, therefore, it is respectfully requested that the above provisional rejection be withdrawn.

Claims 1, 5-7, 31-56, and 59-64 are rejected under 35 U.S.C. 102(e) as being anticipated by van Nee (U.S. 6,175,550). Applicants submit that all of the claims currently pending in this application are patentably distinguishable over the cited references, and reconsideration and allowance of this application are respectfully requested.

Amended independent claim 1 includes, among other limitations, "transmission signal parametric set comprising a constellation size and a single carrier having an adjustable center frequency," "varying said adjustable center frequency," and "defining an optimal constellation size and optimal center frequency for which the channel response characteristic allows optimization of at least one of a bit rate and a noise margin. Van Nee does not teach, nor does it suggest the above limitations.

Rather, van Nee describes a scaleable OFDM system for scaling of the operating parameters and/or characteristics.

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OFDM (Orthogonal Frequency Division Multiplexing) is defined as "a block-oriented modulation scheme that maps  $N$  data symbols into  $N$  orthogonal carriers separated by a distance of  $1/T$ , where  $T$  is the block period." (Col. 1, lines 15-17, underlining added.). "The scaleable OFDM systems can be characterized by various operating parameters, including the following: number of carriers ( $N$ ); symbol duration ( $T_s$ ); number of bits per symbol per carrier ( $m$ ); forward error correction coding scheme; coding rate; and the fraction of the symbol duration that is used as guard time. By varying these parameters, various operating characteristics can be scaled . . ." (Col. 3, lines 3-14, underlining added).

There is no teaching or suggestion in van Nee about "transmission signal parametric set comprising a constellation size and a single carrier having an adjustable center frequency," "varying said adjustable center frequency," and "defining an optimal constellation size and optimal center frequency."

Additionally, although van Nee mentions that the OFDM system "can be used to implement multiple access of multi-rate systems by dynamically scaling the number of carriers" and that the "remote station 74 could be sending on just one carrier, another remote station 74 on 4 other carriers, while a third remote station 74 could be sending on yet another 2 carriers, all at the same time," (Col. 8, lines 21-27), it emphasizes that "the base station 72 of this particular embodiment should be capable of receiving and transmitting at all carriers simultaneously." (Col. 8, lines 34-36, underlining added).

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Therefore, even in the above embodiment, the OFDM system of van Nee remains to be a multi-carrier modulation (OFDM) system that inherently has a fixed center frequency for each sub-channel. As a result, the OFDM system of van Nee does not include "transmission signal parametric set comprising a constellation size and a single carrier having an adjustable center frequency," "varying said adjustable center frequency," as required by the independent claim 1. Consequently, independent claim 1 is not anticipated by van Nee.

Likewise, amended independent claim 41 includes, among other limitations, "varying a center frequency and constellation size of a single QAM channel with which communication is performed, wherein the center frequency is varied by varying a start frequency and a stop frequency thereof." Again, as discussed above, the OFDM system of van Nee does not include the above limitation. Thus, independent claim 41 is not anticipated by van Nee either.

Similarly, independent claims 48, 49, 50, 51, 52, 53, and 54 include, among other limitations, "wherein varying the spectral allocation further comprises varying a symbol rate and a center frequency of the single QAM channel." As explained above, the OFDM system of van Nee does not include the above limitation. Accordingly, independent claims 48-54 are not anticipated by van Nee either.

The remaining amended independent claims 55 and 56 include similar limitations that are not taught or suggested by van Nee. Therefore, these claims are also patentable over van Nee.

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In short, independent claims 1, 41, and 48-56 define a novel and unobvious invention over the cited references. Remaining dependent claims 5-7, 42-47, 61, 62, 63, and 64 are dependent from claims 1, 41, 55 and 56, respectively and therefore include all the limitations of their respective independent claims and additional limitations therein. Accordingly, these claims are also allowable over the cited references, as being dependent from allowable independent claims and for the additional limitations they include therein.

In view of the foregoing amendments and remarks, it is respectfully submitted that this application is now in condition for allowance, and accordingly, reconsideration and allowance are respectfully requested.

Respectfully submitted,  
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